Sanitary Survey Report

Pisinemo Intertie
PWSID No. 0400030

Survey Conducted on March 24, 2016

Survey Conducted for the
Environmental Protection Agency
Region 9

Sanitary Survey Conducted
by

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for

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Pisinemo Intertie
(PWSID No. 0400030)

I. Narrative Report

Sanitary Survey

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A. Introduction

On March 24, 2016, Denver Fraser, P.E., of Sleeping Giant Environmental Consultants, LLP (SGEC), conducted a sanitary survey of the Pisinemo Intertie Public Water System (PWS). Emmanuelle Rapicavoli, with EPA Region 9, also assisted with the survey. Vernetto Ramon and Amber Ramon, with the Tohono O'odham Utility Authority (TOUA), represented the system and provided on-site assistance with the survey. Myrt McIntyre, Manager of the TOUA Water/Wastewater & Propane Department also assisted with the survey. Pablo Figueroa and Nick Silides with Rural Community Assistance Corporation (RCAC) were on site for the survey. Additionally, Adam Hughes, with Indian Health Service (IHS), was on site for the survey.

The Pisinemo Intertie PWS is on the Tohono O'odham Reservation and is located approximately 36 miles northwest of Sells, AZ, on State HWY 86, and 10 miles south on BIA Route 21. The Pisinemo Intertie PWS consists of two active wells, each with a chlorination unit, a common header between the two wells, a transmission main, an arsenic treatment plant, an elevated storage tank, and two distribution systems. The Pisinemo distribution system is connected with the Santa Cruz distribution system, which is located approximately six miles southwest of the Pisinemo community. There are also three additional residences in an area called "Nesters" located between the two distribution systems (approximately three miles southwest of the Pisinemo community). The Nesters residences were not included as a separate distribution system.

Information provided from TOUA indicates that there are approximately 119 active service connections serving approximately 472 persons on this PWS. There are approximately 60 inactive connections on this system. The Pisinemo Intertie PWS is classified as a community system because it serves more than 25 of the same people daily on a year-round basis. As a community PWS, the Pisinemo Intertie is regulated for contaminants that have detrimental health effects over both a short-term (acute) and long-term (chronic) basis.

The sanitary survey site visit was conducted by SGEC on behalf of the U.S. Environmental Protection Agency (USEPA) Safe Drinking Water Act (SDWA) and regulations regarding public water supplies contained in *40 CFR Part 141 – National Primary Drinking Water Regulations* as they apply to most of the PWSs on Tribal lands in Region 9. Regular sanitary surveys of PWSs are an important component of EPA Region 9's implementation program and are critical for protection of the health of PWS water users.

Sanitary surveys are comprehensive evaluations of a PWS's physical components as well as management and operation. Sanitary surveys have an on-site component in which above-ground facilities are inspected, records are obtained and reviewed, and operators and managers are interviewed. PWS components evaluated typically include:

1. Source(s).
2. Treatment.
3. Storage.
4. Pumping facilities.
5. Operator compliance with training and certification requirements.
6. Management and operations.
7. Distribution system (including cross connection control).
8. Monitoring, reporting and data verification.

During the sanitary survey, the eight components listed above are evaluated to determine if appropriate barriers are in place for protection of the users' health. Where they are not, the risk to public health is assessed, deficiencies are found, and recommendations for correction are made. Where public health risks are serious, boil orders may be imposed and enforcement actions may be initiated to ensure corrective actions are taken in a timely manner. Sanitary surveys are normally conducted once every three to five years.

B. Sources

The two wells for this system come together at a common header prior to going to an arsenic treatment plant through a long transmission main. A finished water sample tap is located on the control panel for entry point sampling.

Wells 3 and 4 are the active wells for this system. Well 1 (GW001) and the Lawson Well (GW002) are capped and physically disconnected from the system. The inactive wells were not seen during this survey.

Well 3—GW003 (Photos 2-7). This well is located within a locked fenced area approximately 4.3 miles southeast of the elevated storage tank in the Pisinemo community. Information from TOUA indicates the well was drilled and cased to a depth of 500 feet on June 15, 1992. The casing is slotted between 353 and 500 feet. A pump test was completed in 1992 and indicated a static water level of 331.78 feet and a pumping water level of 350.43 feet at 101 gallons per minute (gpm).

The well is equipped with a 20-hp submersible pump that produces approximately 105 gpm according to meter readings.

The pitless unit wellhead is equipped with a properly vented sanitary seal well cap. The discharge piping for the well has a blowoff, raw water hose bib, pressure relief valve, flow meter, and a finished water sample station. The well pump operates off of a pressure transducer in the elevated storage tank that alternates the operation of the two well pumps based on the water level in the tank. The power source for the two Pisinemo wells is single phase; therefore, each well is equipped with a three phase converter to operate the well pumps. The wells are monitored and can be operated by SCADA from the TOUA building in Sells.

Well 4—GW004 (Photos 9-12). This well is located within a locked fenced area approximately 500 feet southeast of Well 3. Information from TOUA indicates the well was drilled and cased to a depth of 505 feet on September 22, 1992. The casing is slotted between 365 and 501 feet. A pump test was completed in 1992 and indicated a static water level of 335.87 feet and a pumping water level of 349.21 feet at 101.1 gpm.

The well is equipped with a 20-hp submersible pump that produces approximately 92 gpm according to meter readings. The motor for the pump was replaced in 2011.

The pitless unit wellhead is equipped with a properly vented sanitary seal well cap. The discharge piping for the well has been brought above-grade and the vault noted during the previous survey is now empty. The wellhead discharge piping has a blowoff, raw water sample station, pressure relief valve, flow meter, and a hose bib where raw water can be obtained. The pressure relief valve is likely too small to provide adequate pressure relief for the 92 gpm pump flow from the well. There is no tap available to take finished water samples at the well site. The well pump operates off of a pressure transducer in the elevated storage tank that alternates the operation of the two well pumps based on the water level in the tank. The power source for the two Pisinemo wells is single phase; therefore, each well is equipped with a three phase converter to operate the well pumps. The wells are monitored and can be operated by SCADA from the TOUA building in Sells.

C. Treatment

Each well is equipped with its own chlorinator that injects sodium hypochlorite into the discharge piping following the wellhead. The chlorinated well water flows to a common header and then through a transmission main to an arsenic treatment plant and then to the distribution system(s).

There are approximately 24,200 feet of 4-inch PVC pipe following the common header and prior to the arsenic treatment plant. With this significant amount of storage (~15,799 gallons), a peak flow of approximately 197 gallons per minute (gpm), and an estimated water temperature of 25 ^{0}C, a residual of 0.025 mg/L following contact time would supply 4-log virus inactivation.

Chlorination Unit for Well 3—TP001 (Photos 2 and 8). Treatment for Well 3 consists of chlorination with NSF-certified sodium hypochlorite. The chlorination unit is located in a locked structure within the fenced area for Well 3. The sodium hypochlorite is injected into the well's discharge piping (located within a buried vault adjacent to the well) with a ProMinent ConceptPlus positive displacement pump with a capacity of 1.03 gph.

Chlorination Unit for Well 4—TP002 (Photos 9 and 13). Treatment for Well 4 consists of chlorination with NSF-certified sodium hypochlorite. The chlorination unit is located in a locked structure within the fenced area for Well 4. The sodium hypochlorite is injected into the well's discharge piping with a ProMinent ConceptPlus positive displacement pump with a capacity of 1.03 gph.

Arsenic Treatment Plant—TP003 (Photos 14-19). The arsenic treatment plant for Pisinemo was installed by Hennesy Mechanical Sales, LLC, (HMS) in 2013. The plant is located in a building within the same fenced area as the elevated storage tank. This plant operates with water from Wells 3 and 4 entering the pipe and going to Severn Trent Services dual adsorption vessels in a parallel operation. Each adsorption vessel has approximately 22 ft^3 of Bayoxide® SORB E-33 iron adsorptive media.

Water has a typical contact time of three to five minutes for effective arsenic adsorption with the iron adsorptive media. The design for the Pisinemo Intertie has an empty bed contact time (EBCT) of 3.66 minutes at a design flow of 90 gpm; however, both wells were operating together at the time of the survey. Flow measurements taken November 18, 2016, for Wells 3 and 4 and written inside the electrical panels of each well site showed flow rates of 105 gpm and 92 gpm respectively. Vernetto Ramon stated that TOUA would be changing to where the wells alternated operation. If the wells were operating together, the total EBCT would be approximately 1.67 minutes with no bypass.

For operation, the adsorptive media will be periodically backwashed to prevent channeling or plugging of the media and to redistribute the media within the bed. The backwash water discharges into a 2,600-gallon polyethylene tank. After allowing fines to settle, the backwash water is recycled to the front of the arsenic treatment plant. Backwashing is done manually, and records are kept of flows, pressure drop, media change-out, and backwashes at the site.

The arsenic levels for Wells 3 and 4 used for treatment design purposes were 10 parts per billion (ppb) and 11 ppb respectively. The maximum contaminant level (MCL) for arsenic is 10 ppb. Additionally, the Pisinemo system has uranium levels that often exceeded the MCL of 30 ppb. An Arsenic Compliance Feasibility Study for the Pisinemo Water System was completed by IHS in December 2015 and stated that the uranium ranged from 24 to 36 ppb. Other testing has shown the uranium level to be as high as 49 ppb. The Hennesy design materials in the operation and maintenance (O&M) manual states that, "iron based media is known to remove uranium at varying efficiencies based on site-specific water quality, although limited historical data exists." The IHS feasibility study stated that when the arsenic treatment plant was installed and put into operation that it was removing all the uranium from the water; however, this caused the SORB E-33 media to be depleted after just six months operation. The cost to replace the media was $27,733.

The IHS study looked at a number of options to address the arsenic and uranium problem and concluded the existing treatment was the best and most cost effective option. With that, blending the raw water with treated water would be beneficial to maximize the life of the media and reduce costs.

For arsenic removal, the adsorption process is described as chemisorption and is considered irreversible. Therefore, the media has a defined bed life that is dependent on raw water quality and must be replaced when exhausted. The average of quarterly samples taken in 2015 following arsenic treatment showed total arsenic at 2.6 ppb.

The average for uranium taken for 2015 was 27.7 ppb; however, the uranium treatment appeared to be very inconsistent between raw and finished water treatment efficiency. Additionally, the running annual average of sampling for the last three quarters of 2015 and the first quarter of 2016 exceeded the MCL with a result of 31.7 ppb.

D. Finished Water Storage

Elevated Storage Tank—ST001 (Photos 20-30). This 125,000-gallon elevated storage tank is located within a locked fenced area approximately 1,970 feet east of BIA Route 21 in the Pisinemo community. The tank was constructed in 1996 and has a 124.5-foot overflow elevation and a bottom elevation of 99.75 feet. The tank is constructed on concrete footings at an elevation that provides approximately 43 to 54 pounds per square inch (psi) at the base of the tank.

The ladder for the tank is equipped with a safety cage and safety cable. The cage opening is not equipped with a locking hatch, but there is a locking cover near the bottom of the ladder to help prevent unauthorized access.

The outlet of the overflow line is screened and terminates at an adequate distance above the ground. A splash pad is provided. The tank drain line is installed below grade and connects underground to the discharge piping from the overflow line.

The main access hatch at the top of the tank is bolted shut on both sides and would take a wrench to open. The access hatch properly overlaps the access riser; however, it did not appear that the access hatch was equipped with a gasket (the hatch was not opened during the survey). There is a locked secondary access hatch plate over the top of the vent. This hatch does not overlap the vent access and is not equipped with a gasket to ensure a tight seal. The interior of the tank appeared to be in good condition and the water appears clear, although there is some discoloration near the bottom of the tank.

The vent is equipped with an insect screen under a coarse bird screen. A shroud cover on the vent protects the vent opening against wind-blown dust. The vent appeared to be in good condition.

The water level target mechanism was not working at the time of the survey. The open area between target sight gauge cable and the conduit was large and would allow entry of insects into the tank.

E. Distribution System

The distribution mains consist of 2-, 4-, and 6-inch PVC pipe in Pisinemo Intertie and in the community of Santa Cruz. There is also some 3-inch asbestos cement pipe in the distribution system. As stated previously, there are approximately 24,200 feet of 4-inch PVC transmission pipe between the wells and the Pisinemo community distribution system. Additionally, there are approximately 19,800 feet of 4-inch PVC pipe installed for the intertie between Pisinemo and the Santa Cruz distribution system (this also includes the three homes in Nesters).

There are a number of air relief valves in shallow vaults between the wells and the arsenic treatment plant location. These valves are located in shallow plastic vaults near the road and have been subject to repeated damage from vehicle traffic (Photo 33). The air relief piping is downward facing, but does not extend a minimum of 12 inches above grade, as required by most modern design standards (e.g., Ten States Standards) (Photo 31). Design standards require the air relief piping be above-grade to prevent cross-connection backflow contamination should the vault flood from leaks or heavy rain. TOUA has stated that the relief piping above grade leads to vandalism and leakage, because the air relief pipe is used to break the line going to the valve. During the survey, it was thought that the end of the relief valve piping wasn't properly screened; however, photographs seen after the survey indicate the ends are properly screened (Photo 32).

Chlorine residuals were taken in Pisinemo and Santa Cruz. The residual in Pisinemo was 0.94 mg/L, and the residual in Santa Cruz was 1.13 mg/L (Photo 34).

There is one pressure relief valve (PRV) station in a vault between Pisinemo and Nesters. A pressure reading taken in Santa Cruz showed a reading of over 100 pounds per square inch (psi), indicating the PRV was not working. When the PRV was inspected, the pressure gauge downstream of the valves was reading approximately 85 psi. The PRV vault was not entered due to confined space issues to determine the upstream pressure (Photos 35-38).

The mains are reportedly in good condition with little leakage. The sanitary survey form accompanying this report provides further discussion of the distribution mains.

F. Monitoring, Reporting, and Data Verification

The TOUA laboratory department has developed a Water Quality Control Laboratory 2015 Sampling Plan – April 2015. This report has been updated for 2016 and is presently in the review process. This document outlines procedures to be followed for sample collection, handling, and chain of custody. Each TOUA public water supply is identified in the plan, and each public water supply sampling plan has been submitted to USEPA Region 9 for approval.

The TOUA has developed four sampling routes: east, north, south and west. Previously, the routing schedule identified a sample rotation for the system but did not specifically identify a sampling site. The water quality technician (sample collector) would then collect a sample within the scheduled area from a site that is available. Vernetto Ramon is presently working to identify sample sites by housing location numbers and locating these sites on Google Earth and TOUA village maps. The bacteriological samples will then be obtained from different approved sites for each system each month, as required by the Revised Total Coliform Rule (RTCR).

At a joint TOUA, IHS, EPA, and RCAC meeting on March 22, 2016, sampling and sample plans for TOUA were a topic of discussion. EPA presented TOUA with a template of a Comprehensive Sample Site Plan (CSSP). A properly developed CSSP will address the sample requirements for the RTCR, Ground Water Rule (GWR), Lead and Copper Rule (LCR), and the Disinfectants/Disinfection Byproduct Rule (D/DBPR). It was also discussed that RCAC could be used to assist TOUA with the development of CSSPs for their PWSs.

Monitoring compliance was not part of the field sanitary survey. However, Emmanuelle Rapicavoli, USEPA Region 9 environmental engineer, will be working with TOUA for all monitoring, reporting, and data verification requirements for their systems and sample sites. Entry point samples for the Pisinemo system are obtained from the control panel on the arsenic treatment plant.

G. Management and Operations

The TOUA operates under a resolution of the Tohono O'odham Legislative Council. The Tohono O'odham Legislative Council established a Management Board that oversees the operation of the TOUA under authority of the Second Restated Plan of Operation (5/22/1991). Among other things, the TOUA was organized "to acquire, construct, operate, maintain, promote, and expand utility systems furnishing electric, gas, water, sewer, and telephone services within the Tohono O'odham Nation."

The Water/Wastewater Department is one of six departments within the TOUA. This department oversees all public water systems within the Tohono O'odham Nation. The department positions are identified on the organizational chart below (see Figure 1). There have been 52 public water systems within the Tohono O'odham Nation, but due to consolidation and interties, the number has been reduced to 32.

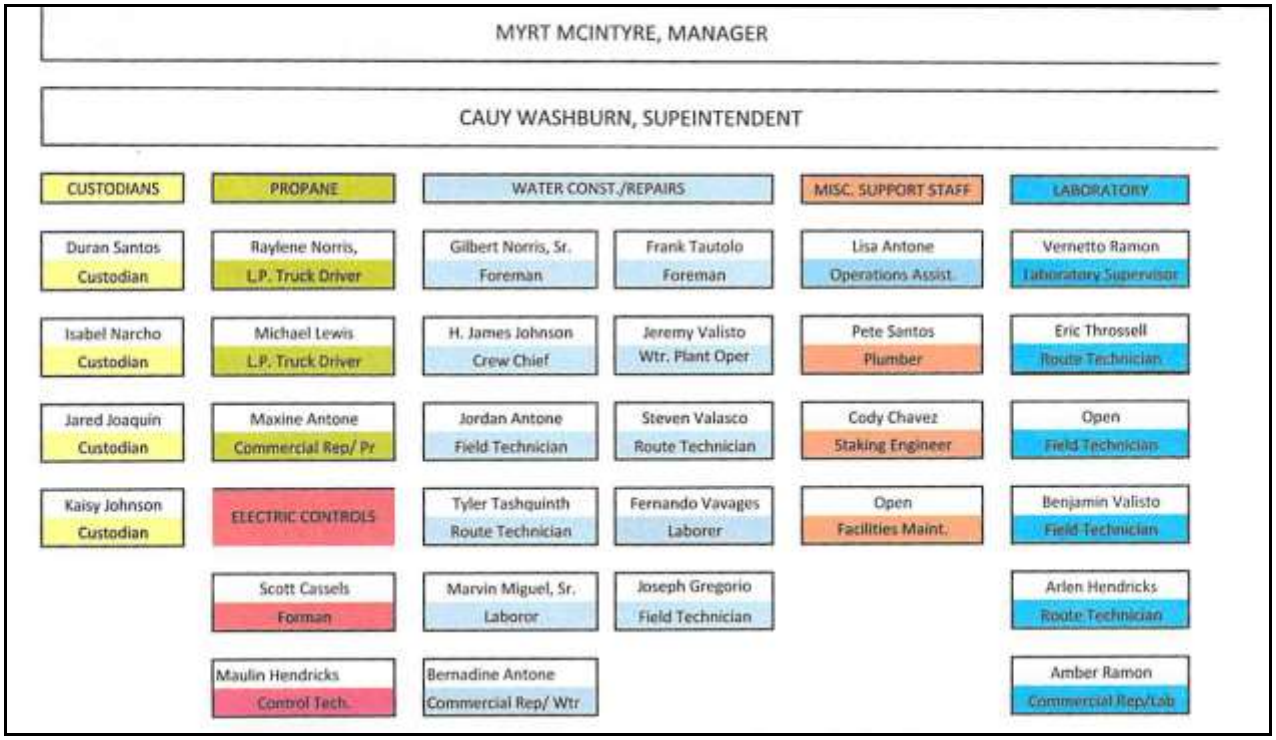

Figure 1: TOUA Organizational Chart

The TOUA has numerous rate classes for water and wastewater services. A typical residential service pays a fixed charge of $35.59 per month, with an increasing block rate ranging from $3.16 per 1,000 gallons for the first 2,000 gallons to $4.56 per 1,000 gallons for use in excess of 30,000 gallons. Commercial rates are based on meter size, also with an increasing block rate The accompanying sanitary survey form includes the updated metered water and sewer service schedule as of January 1, 2016. The TOUA reported that they have an excellent collection rate. The TOUA has a shut-off policy for delinquent accounts, a penalty charge, and a re-connection fee. There were no indications of budget shortfalls, and TOUA personnel reported that there are no problems associated with inadequate funding.

The TOUA has a safety program that includes confined space entry, lock-out/tag-out, and excavation safety, as well as other standard safety policies. Storage tank ladders are equipped with safety cages and/or safety cables. Randy Cook was hired as safety officer for TOUA in early 2015. Vernetto Ramon is presently working on a safety plan for the Water & Wastewater Department.

A radio telemetry SCADA system at the TOUA office in Sells, AZ, monitors operation of most of the water systems. The on/off status of the wells and the water level in the storage tanks are monitored and recorded in Sells. The wells at these telemetered systems can be operated by the SCADA system from the office in Sells. Well operation and storage tank level information are telemetered from the Pisinemo system to the TOUA office in Sells.

H. Operator Compliance

The TOUA has seven individuals who have water treatment and/or water distribution operator certification (Page 22 of form in Section II). Myrt McIntyre, Water/Wastewater and Propane Manager, is a Water Treatment Grade 3 and Water Distribution Grade 3 by the Arizona Department of Environmental Quality. Vernetto Ramon, Lab Supervisor, is certified Level 1 Distribution and Level 1 Treatment by the Inter Tribal Council of Arizona, Inc., (ITCA). These two individuals oversee the water distribution and treatment operations, water quality sampling, and water quality monitoring for TOUA.

I. Deficiencies and Recommendations for the Pisinemo Intertie

Following is a list of deficiencies and recommendations for the system based on information gathered during the sanitary survey. Each deficiency is ranked in order of severity and is assigned a **Health Risk Priority** number.

Deficiencies assigned a **Health Risk Priority 1** are deficiencies that present a serious health risk. Health Risk Priority 1 deficiencies should be corrected immediately.

Deficiencies assigned a **Health Risk Priority 2** are deficiencies that present a critical system defect, critical operational defect, or potential health hazard. Health Risk Priority 2 deficiencies should be corrected as soon as possible.

Deficiencies assigned a **Health Risk Priority 3** are deficiencies that present a critical system defect, critical operational defect, or potential health hazard, but are not as significant as Health Risk Priority 2. Health Risk Priority 3 deficiencies should be corrected as workload allows.

Deficiencies assigned a **Health Risk Priority 4** are deficiencies that present a system defect, operational defect, or potential contamination hazard and are costly to correct. Health Risk Priority 4 deficiencies should be addressed in any long-range water system improvement project.

Deficiencies assigned a **Health Risk Priority 0** are suggestions for improvement, though not a health risk.

1. **Arsenic/Uranium Treatment Plant Optimization and Standards Operating Procedures (SOPs) – Health Risk Priority 1** *(TP003– Codes T1 & T2):* Sampling results have shown that the arsenic treatment plant has worked well for removing arsenic well below the MCL. However, it has been determined that the existing plant can also remove uranium, though the efficiency and effectiveness of this removal has been inconsistent. The last quarter of uranium testing resulted in the Pisinemo Intertie system exceeding the MCL for the year on a running annual average with a result of 31.7 ppb (the MCL for uranium is 30 ppb). The operators

do not have SOPs for operation of the plant to optimize the removal of the two contaminants.

Water has a typical contact time of three to five minutes with iron adsorptive media for effective arsenic adsorption. The design for the Pisinemo Intertie called for an EBCT of 3.66 minutes at a design flow of 90 gpm. This flow rate would be less than either of the two wells operating alone; however, both wells were operating together at the time of the survey. Flow measurements taken November 18, 2016, for Wells 3 and 4 and written inside the electrical panels of each well site showed flow rates of 105 gpm and 92 gpm respectively. If the wells were operating together, the total EBCT would be approximately 1.67 minutes with no bypass.

Recommendation: It is recommended that TOUA work with the treatment plant vendor and manufacturer to optimize the existing treatment for both arsenic and uranium removal. It is recommended that TOUA consider using RCAC to assist in the development of SOPs for operation of the treatment plant to ensure that the operators are running the plant in an optimized fashion on a continuous basis. RCAC has personnel who are experienced in SOP development and can offer valuable assistance at no cost to TOUA. It is also recommended that further research be done to determine if operating the system in series rather than parallel would be of benefit for maximizing the media life for both arsenic and uranium removal. This would likely require significant design and flow changes for the existing system, but could result in lower long-term operating costs. It is understood that TOUA was going to change the well operation to alternate the wells rather than operating them together. This is recommended and would result in the arsenic treatment plant operating closer to the design flow and may improve uranium removal.

2. **Air Relief Valve Backflow Prevention and Vault Renovation – Health Risk Priority 2** *(DS001 and DS002 – Code D3):* The transmission mains from the wells to the arsenic treatment plant have a number of automatic air release valves installed in shallow plastic vaults. These valve vaults are located near the road to the wells and have been subject to repeated damage from vehicle traffic and vandalism. Additionally, the air relief piping is below grade in the vaults, resulting in a potential backflow situation if the vaults flood. Modern design standards require the relief piping to extend a minimum of 12 inches above grade and terminate in a downward position with non-corrodible insect screen over the end of the pipe. It is understood that TOUA does not wish to extend the piping above grade due to previous vandalism where the relief pipe is used to break the valve off the transmission pipe, which results in a large leak (Photos 31-33).

   Recommendation: It is recommended that the TOUA air relief valves in the transmission lines and distribution system have proper backflow prevention. As stated above, design standards require the discharge piping for air relief valves be brought above grade; however, there are inflow preventers on the market that offer protection from contamination by flood water and vandalism (Photo below). Val-matic makes the inflow preventer and these can been seen online. Additionally, it is recommended that more robust valve service vaults with locking lids be used to protect the air relief valves. These vaults could be made of cast iron and could be protected with bollards to prevent damage from vehicle traffic.

Val-Matic Floodsafe Inflow Preventer

3. **Pressure Reducing Valve (PRV) Adjustment or Repair– Health Risk Priority 2** *(DS002 – Code D1):* A pressure reading taken at a home in Santa Cruz showed a pressure of over 100 psi (Photos 35-38), and the downstream pressure gauge in the PRV vault indicated a pressure of approximately 85 psi. It is recommended that working pressures in distribution systems not exceed 80 psi to prevent damage to plumbing and appliances.

   Recommendation: The PRV should be adjusted or repaired to ensure that working pressure is below 80 psi in the distribution system in Nesters and Santa Cruz.

4. **Elevated Storage Tank Access Hatch Seals – Health Risk Priority 2 (ST001– Code ST1):** The access hatches for the elevated storage tank were not fitted with gaskets. Any openings between the access riser and hatch could allow entry of insects or other contaminants into the tank (Photos 26 and 29). Additionally, the vent access hatch is not fitted with a shoebox style lid to assist in preventing entry of windblown contaminants (Photo 27).

   Recommendation: It is recommended that gaskets be installed between the access hatches and the tank risers. Although the access hatches appeared to fit tightly, gaskets would provide a tighter access hatch fit and extra protection against the entry of insects or other contaminants. Additionally, the hatch plate over the vent opening does not extend down over the riser (shoebox style fit). A gasket would help ensure a tighter seal against windblown contaminants, but consideration should be given to manufacturing a shoebox style hatch for the vent opening.

5. **Elevated Storage Tank Sight Gauge Cables – Health Risk Priority 2 (ST001–Code ST1):** The opening where the sight gauge cable enters the conduit on the target is not sealed and could allow entry of insects into the tank (Photo 25).

   Recommendation: The openings between the cable and conduit should be sealed. This will help prevent entry of insects into the tanks.

6. **Comprehensive Sample Site Plans (CSSP) – Health Risk Priority 3** *(MR2):* The Revised Total Coliform Rule (RTCR) requires all PWSs to collect coliform samples according to a written sample siting plan. This plan ensures that samples are representative of the entire distribution system. While TOUA develops an annual Water Quality Control Laboratory Sampling Plan for their PWSs, these plans do not identify specific sampling sites that TOUA will be using each month. In addition to total coliform sites, the CSSP should also identify sample sites for compliance with the Ground Water Rule (GWR), Lead and Copper Rule (LCR), and the Disinfectants/Disinfection Byproducts Rule (D/DBPR).

   Recommendation: At the joint TOUA, IHS, EPA, and RCAC meeting in March 2016, EPA presented TOUA with a template CSSP that would comply with the requirements of the RTCR, GWR, LCR and D/DBPR. At that meeting, RCAC confirmed that they were available to assist TOUA in developing these plans for each of their PWSs. It is understood that TOUA is currently working to identify their sampling sites by housing location numbers and to locate these sites on Google Earth and/or TOUA village maps. However, it is recommended that TOUA consider using RCAC to assist in the development of CSSPs for each of their water systems. RCAC has personnel who are experienced in the development of CSSPs and can offer valuable assistance at no cost to TOUA. Once the plans are developed, the CSSPs need to be submitted to the USEPA Region 9 program manager for approval. The approved CSSPs need to be used to ensure proper sample collection.

7. **Elevated Storage Tank Target Cable – Health Risk Priority 3** *(ST001– Code ST1):* The target cable for the elevated storage tank is not working (Photo 24).

   Recommendation: The target should be repaired so operators can read the tank levels and compare them with SCADA readings if necessary.

8. **Well 4 Pressure Relief Valve Sizing – Health Risk Priority 0** (*GW004 – Code S1b):* The pressure relief valve on the wellhead for Well 3 is small and would not be sized correctly for the 92 gpm flow for the well (Photo 10).

   Recommendation: Pressure relief valves are not necessarily required for systems with gravity storage. It was explained that TOUA will install pressure relief valves to relieve pressure transients in their extensive distribution systems. Additionally, it has been seen once where discharge piping froze to an extent that several wells were pumping through their pressure relief valves. With that, it is recommended that when discharge pipe work is done on the wells that a properly sized pressure relief valve be installed that would discharge an adequate amount of water to relieve excessive pressure and prevent the pump from burning out.

II. Sanitary Survey Form, Scanned Information Provided from System, and Schematics

III. Photographs